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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------|------------------|
| 10/625,853 | 07/22/2003 | Tetsuya Okumura | 59626 (70904) | 8010 |
| 21874 | 7590 | 02/07/2006 | EXAMINER | |
| EDWARDS & ANGELL, LLP P.O. BOX 55874 BOSTON, MA 02205 | | | DILDINE JR, R STEPHEN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2133 | |

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/625,853

Applicant(s)

OKUMURA ET AL.

Examiner

R. Stephen Dildine

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-15, 18-34 and 37-40 is/are allowed.
- 6) ☒ Claim(s) 15-16 and 35-36 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some * c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date 22 July 2003.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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Specification

The disclosure is objected to under 1.77(b)(2) for failure to contain, as the first sentence after the title, a reference to the Japanese application upon which priority is being claimed.

Figure 8 does not seem to correspond to the description of Figure 8 appearing at the first full paragraph of page 45 of the specification. In Figure 8, $c(0,n)$ converges to +3 and $c(1,n)$ and $c(2,n)$ converge to -1 while the specification states "The ultimate value was about -1 for $c(0,n)$ and $c(2,n)$ and about +3 for $c(1,n)$ ".

Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 16 and 35 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. This claim is directed to a computer program *per se*, which is neither a process, machine, manufacture, nor composition of matter. Claims directed to nothing more than abstract ideas (such as mathematical algorithms), natural phenomena, and laws of nature are not eligible for and therefore are excluded from patent protection. *Diehr*, 450 U.S. at 185, 209 USPQ at 7; accord, e.g., *Chakrabarty*, 447 U.S. at 309, 206 USPQ at 197; *Parker v. Flook*, 437 U.S. 584, 589, 198 USPQ 193, 197 (1978); *Benson*, 409 U.S. at 67-68, 175 USPQ at 675; *Funk*, 333 U.S. at 130, 76 USPQ at 281. "A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right." *Le Roy*, 55 U.S. (14 How.) at 175. Instead, such "manifestations of laws of nature" are "part of the storehouse of knowledge," "free to all men and reserved exclusively to none." *Funk*, 333 U.S. at 130, 76 USPQ at 281. Thus, "a new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter" under Section 101. *Chakrabarty*, 447 U.S. at 309, 206 USPQ at 197. "Likewise, Einstein could not patent his celebrated law that $E=mc^2$; nor could Newton have patented the law of gravity." *Ibid*. Nor can one patent "a novel and useful mathematical formula," *Flook*, 437 U.S. at 585, 198 USPQ at 195; electromagnetism or steam power, *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 113-114 (1853); or "[t]he qualities of * * * bacteria, * * * the heat of the sun, electricity, or the qualities of metals,"

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Funk, 333 U.S. at 130, 76 USPQ at 281; see Le Roy, 55 U.S. (14 How.) at 175. See also Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the sixth paragraph of 35 U.S.C. 112:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Claims 16-17 and 35-36 are rejected under 35 U.S.C. 112, first and sixth paragraph, for failure to provide, in the specification, a written description of the invention, and of the manner and process of making and using the computer program claimed in claims 16-17, and for failing to provide, in the specification, a disclosure of the corresponding structure, material, or acts which correspond to the claimed computer program functioning as "each of the means" of claim 1 as claimed in claims 16-17. In other words, these claims must be supported by the disclosure of the claimed computer program.

Allowable Subject Matter

Claims 1-15, 18-34 and 37-40 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: none of the cited reference teach or fairly suggest a combination having both a path metric difference detection and an equalization means responsive thereof as recited in claims 1-15 and 26-28. Further, none of the cited references teach or fairly suggest a target value register as recited in claims 18-25. Further, none of the cited references teach or fairly suggest a combination having both a path metric difference detection and specific pattern detection as recited in claims 29-34 and 37-40.

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Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Rafie et al. (2002/0196844) is cited to show an adaptive equalizer, Xia et al. (2002/0186762) shows a system wherein an error signal is generated by subtracting an output of the decision feedback equalizer from an output of the decision device, the error signal being used to update coefficients of the taps of the FIR filter and the decision feedback equalizer, Aizawa et al. (2002/0181574) shows using a training section to adjust the taps of an adaptive equalizer followed by a path metric computation section, Campello De Souza et al. (2002/0129318), Marukawa (6,836,511) and Atsushi et al. (EP 1 006 527 A1) show an equalizer followed by a Viterbi decoder, McClellan (6735724) is cited to show the use of a path metric difference at the state with the smallest resulting state metric to adjust coefficients in a FIR filter, Visotsky et al. (6175588) is cited to show comparing a pilot channel estimate with a predetermined data pattern to produce an error signal used to control an equalizer, Nobakht et al. (5,692,011) is cited to show a trainee system having a Viterbi means used to adjust the coefficients of a feed forward filter and Naoiet al. (5,479,419) shows a Viterbi algorithm processor with feedback to a channel estimator. Hayamizu (JP 06303099) is cited to show controlling the coefficient of a filter based upon the results of a Viterbi decoder, Kashiwabara et al (JP 2003123402) shows controlling an equalizer by the difference between the output of a Viterbi decoder and an idealized signal, Ishibashi et al., V. Lin et al., Chakraborty et al. and Minn et al. show various adaptive ARQ schemes, M. Lin et al. teaches an pragmatic trellis coding in an adaptive ARQ environment and Sklar is cited for his teachings about maximum likelihood sequence estimation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to R. Stephen Dildine whose telephone number is (571) 272-3820. The examiner can normally be reached on M - F 5:30 am to 2:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink that reads "R. Stephen Dildine". The signature is written in a cursive, flowing style.

R. Stephen Dildine

R. Stephen Dildine
Primary Examiner
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